

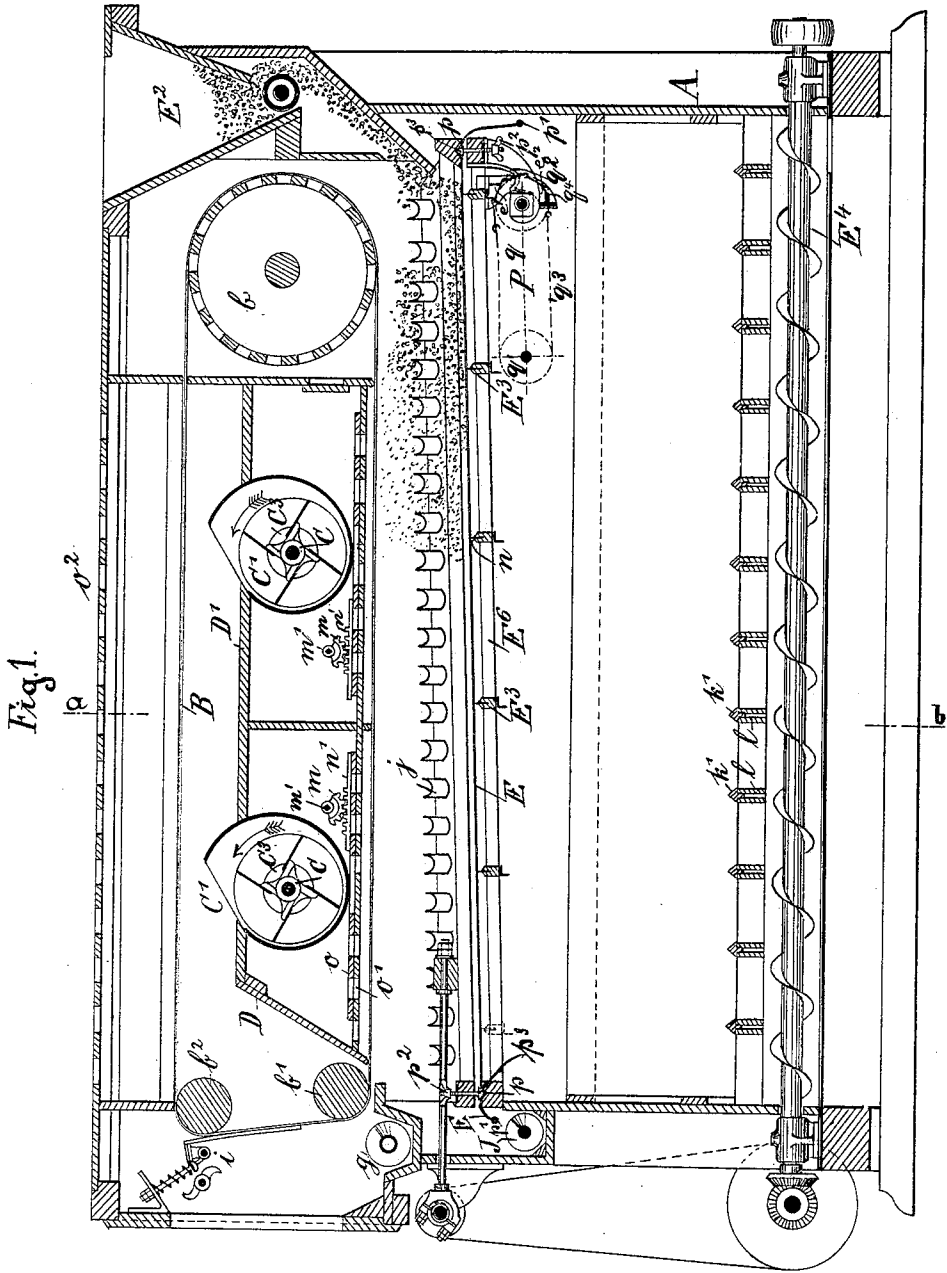
(No Model.)

3 Sheets—Sheet 1.

H. SECK.
DUST COLLECTOR.

No. 386,037.

Patented July 10, 1888.



Witnesses.
J. A. Rutherford
Robert Everett

Inventor.
Heinrick Seck.
 By *James L. Norris*
Atty.

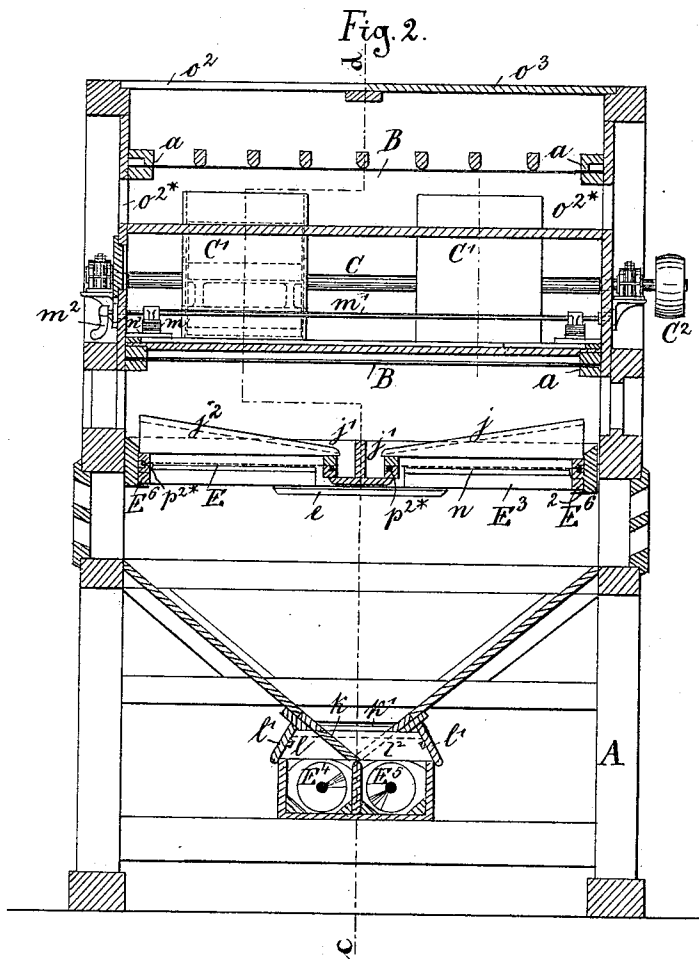
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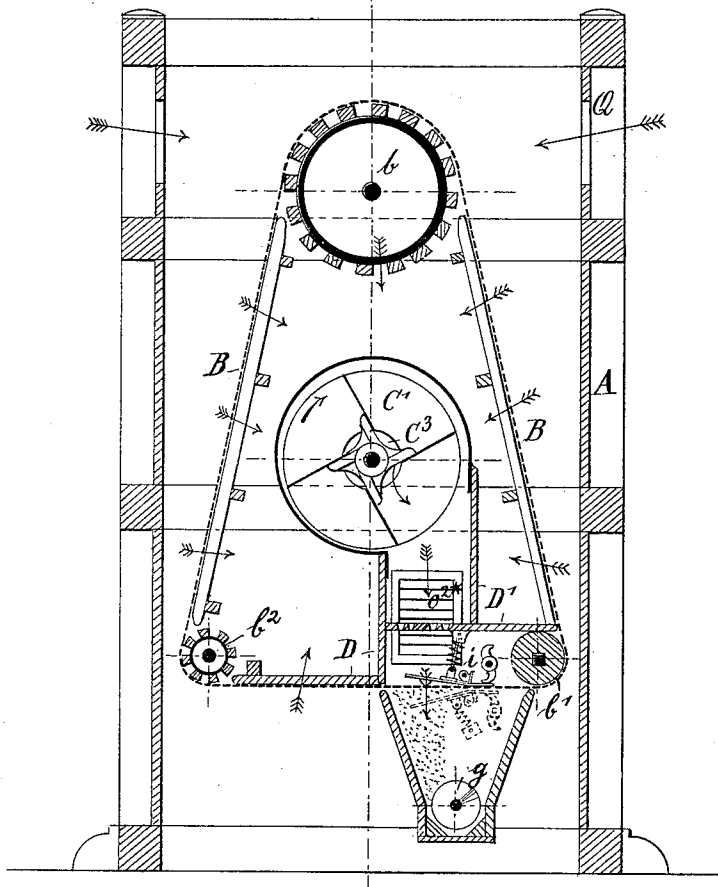
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Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

HEINRICH SECK, OF DRESDEN, SAXONY, GERMANY, ASSIGNOR OF ONE-HALF
TO HENRY SIMON, OF MANCHESTER, ENGLAND.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 386,037, dated July 10, 1888.

Application filed May 22, 1886. Serial No. 203,037. (No model.)

To all whom it may concern:

Be it known that I, HEINRICH SECK, of the city of Dresden, in the Kingdom of Saxony and German Empire, have invented a certain new and useful Improvement in Dust-Collectors, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to machines for separating and collecting dust or the like from air by means of air-suction, and is more particularly adapted for use in purifying grits and middlings and in collecting the dust from the dust-chambers employed in flour-mills.

The said invention comprises improvements upon the machines described in my former Letters Patent, Nos. 306,648 and 316,190; and its objects are to simplify the construction and improve the operation of said machines, as hereinafter described and claimed.

In the drawings forming part of this specification, Figure 1 is a vertical longitudinal section on line *cd*, Fig. 2, of a machine embodying my said improvements. Fig. 2 is a vertical transverse section of the same on line *ab*, Fig. 1; and Fig. 3 is a modified form of my said machine, showing the filtering-cloth when employed as a dust-collector.

Like letters indicate similar parts in all the figures.

The general construction and operation of a machine for removing light matter by air-suction, to which the present invention relates, are fully disclosed in the patents cited, and hence will require no detailed description. The principle embodied therein will, however, be stated briefly, as follows: The substances to be separated enter upon the reciprocating sieve *E* from the hopper *E'*, and the light parts of said substances are drawn off by means of suction acting through an endless filtering-cloth, *B*, traveling over rollers *b b'*, and the filtering-cloth is cleaned of the light matter adhering thereto by means of a beating device, *z*, acting upon the said cloth at a point, as shown in Fig. 1, where the cloth is under the action of forcing air and not under the sucking action of the exhaust-fan which has drawn the said light matter against the cloth. Those light substances, which do not rise far enough

so as to adhere to the filtering-cloth, are, on falling back, again diverted sidewise by the current of air, as described in my above-mentioned patents, and drop into inclined grooved bars *j*, forming a grate upon the reciprocating sieve. The latter is cleaned continually by jarring, as described in my above-mentioned patent, No. 306,648, so as keep its meshes always open, and the heavy substances passing through the latter drop into two conveyers, *E¹* *E²*, which are covered, as hereinafter described, so that either will receive the said substances, or both will receive a controllable quantity of the same. Motion is imparted to the conveyers and other working parts of the machine, in the usual manner, by means of belts and pulleys and as described in the said former patents. This construction of the machine being well known, I shall now proceed to describe the improvements forming the subject-matter of this invention.

In order to obtain a better drawing or suction action through the filtering-cloth *B*, the blowers or exhaust-fans *C* are arranged in a novel manner, but within the space inclosed by the said cloth, so that the said fan or fans act permanently and immediately on one side as exhaust-fans upon the under side of the traveling cloth and as blowers upon that part of the cloth which at the same time is being cleaned under the action of a suitable beating device. To this end the said fans, of which one or more may be employed for the purpose stated, are located within the space inclosed by the traveling cloth *B*, and are mounted upon the shafts *C*, journaled in the frame *A*, the usual sucking or inlet openings, *C³*, being provided in the sides of the fan-casings. The outlet opening for each fan is separated from the inlets thereof by the boxes *D D'*, which form two compartments within the said space inclosed by the cloth *B* and divide it into a lower space or spaces which are constantly under the drawing or sucking action, and an upper space which is under the forcing or blowing action of the said fan or fans. (See Figs. 1, 2, and 3.) The bottom of the boxes *D D'*, inclosing the fans *C*, may be provided with air-holes *o'*, as shown in Fig. 1, which may be partly closed by the slides *o*, so that the draft of air can be diminished and controlled. The

slides *o* are operated through their racks *n'* by means of the toothed segments *m*, keyed upon shafts *m'*, suitably journaled in the frame of the machine, and provided with handles *m²*, by which the said shafts can be turned.

The traveling filtering cloth is cleaned of the adhering substances by means of the beating device *i*, of usual construction, but consisting of a plate of leather, this material being chosen in order to materially diminish the ruinous effect which the continuous blows will produce upon the filtering-cloth. The said leather plate strikes the latter intermittently in the same manner as the beaters described in my former patents referred to, and also causes the substances adhering to the cloth *B* to drop into the conveyer *g*, the blowers or fans *C'* forcing the air drawn into the space inclosed by the filtering-cloth to act energetically upon the inner surface of that part of the cloth which moves before the said beating device *i*, thus causing this part of the cloth to be cleaned in a most perfect manner.

The filtering-cloth *B* may as well travel in the one as in the other direction. If it moves in the same direction as the substances on the reciprocating sieve *E*, so that the upper side of the said cloth has already been beaten and is in a cleaned state, the upper plate or cover of the machine is preferably provided with openings *o²*, through which part of the forcing air is allowed to escape; but if the cloth travels in the opposite direction the said upper plate should be entirely closed, as shown at *o³*, Fig. 2, and the forcing air escapes through the openings *o^{2*}* in the sides of the frame after having acted upon the inside of the upper and front surface of the cloth and part of the said air having passed through the latter. By thus arranging the fan or fans within the space inclosed by the rotating filtering-cloth *B*, and thus causing them to draw and force the air in a direct manner through the said cloth, a better drawing or sucking action, as well as—what is most important—a better forcing or blowing action, and thereby a more perfect cleaning of the filtering-cloth are attained than would be the case if the drawing and forcing air-currents were produced by means of pipe-conduits connecting with the said space, as heretofore.

The bars *j*, having the inclined grooves, and constituting a grate rigidly connected with the reciprocating sieve *E*, as in the said former patents, are arranged in a transverse direction, so that they will deliver the substances, not reaching the traveling cloth and falling into the said grooves, as described, into longitudinal channels *j' j'*, Fig. 2, which are connected to and reciprocated with the frame of reciprocating sieve *E*, as well as the grooved bars *j*, and empty said substances into the conveyer *J*, Fig. 1.

Underneath the reciprocating sieve *E* there is arranged the frame *E^o*, having transverse bars *E³*, said frame moving simultaneously as well with the reciprocating sieve as independently of the latter, and acts both to support

the sifting surface of the said sieve and prevent it from bulging under the weight of the substances by means of strips *n*, of leather, wood, felt, or the like, inserted in the upper edges of the transverse bars *E³*, and to thoroughly clean the sifting-surface in a continuous manner, thus dispensing with the brushes heretofore employed for the latter purpose.

The frame *E^o* is moved independently of the sieve *E* by means of a mechanism comprising sprocket-wheels *q q'* and a chain *q³*, having projections *q⁴*, which bear against arms *e' e²* on the frame *E^o*. The cloth or silk that forms the sifting-surface of the sieve *E* is held in place by bars *p³*, secured by set-screws *p*, that can be tightened by nuts *p²*, and, if desired, the sifting-silk can be lined with linen inclosing a rope, *p^{2*}*, as usual. The conveyers *E⁴* *E⁵* are covered by means of reversible slide-boxes consisting of the two side boards, *l' l'*, transverse bars *l²*, and an inclined plate, *k*, adapted to be moved in either direction by means of the boards *l*, engaging guide-bars *k'*, as usual.

In the modification of my improved machine, as shown in Fig. 3 of the drawings, the same is employed in a dust-chamber to suck or draw through the apertures *Q* of the frame *A* the dust or other light substances suspended in the said chamber, and the rocking sieve *E* and its connecting parts are omitted, the same as in Fig. 3 of the said former Letters Patent No. 316,190, while the fan or fans *C'* are arranged, as hereinbefore described, within the space inclosed by the filtering-cloth *B*, moving on the three guide-rollers *b' b' b²* either in the one or in the other direction. The exhaust fan or fans draw the dust against the moving cloth, and the air, passing through the latter in a purified condition, enters the said fan or fans through the openings *C³*, and is forced by the same fan or fans against that part of the moving cloth which is passing through the space inclosed by the plates *D D'* and the roller *b'*, and not subjected to the action of or disturbed by the suction-air.

The beating device *i* may either be arranged behind the moving cloth *B*, as shown in full lines, or in front of the same, as shown in dotted lines, or as illustrated in Fig. 1 of the drawings. The forcing air blown against the moving cloth by the said fan or fans and assisting the beating device in its work, as above set forth, escapes again partly through the pores or meshes of the moving cloth and partly through the lateral openings *o^{2*}*, while the dust or other light matter beaten from the said cloth falls into the conveyer *g* and thus is carried off.

I wish it to be understood that in order to increase the working-surface or suction area of the said filtering-cloth, when used for the modified form of machine last described, the said surface may, instead of being even, as well be arranged in form of zigzags, and either be guided and move on the said guide-roller *b* or be stretched and fastened upon a suitable

frame in a well-known manner, said frame rotating or moving together with the said cloth around the fan or fans arranged within the space inclosed by the moving frame and cloth, strictly in accordance with the nature of my present invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

10 1. In a machine for separating light and heavy substances, the combination of an endless traveling filtering-cloth, a partition dividing the space inclosed by the cloth into separate compartments, and a fan located
15 within said space and communicating with one of said compartments through its inlet and with the other compartment through its outlet, whereby air is sucked in through the cloth into one compartment and blown out
20 through the cloth in the other compartment, substantially as described.

2. In a machine for separating light and

heavy substances, the combination of an endless traveling filtering-cloth, a box or partition located in the space inclosed by said cloth, whereby one portion of the cloth-surface is exposed to the influence of a suction-blast and another portion is cut off from the influence of the suction-blast, but exposed to the action of a forcing-blast, a fan located within the space inclosed by said cloth to draw air through one portion of the filtering-cloth and force it through another portion, and a beater located in contact with that portion of the cloth cut off from the influence of the suction-blast, but under the influence of the forcing-blast, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HEINRICH SECK.

Witnesses:

PAUL DRUCKMÜLLER,
E. DOMSCH.